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Legal Sidebar

Stratospheric Ozone Treaties and the Kigali Amendment: Ratification Considerations

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For at least four decades, the United States has been engaged in global efforts to protect the earth's stratospheric ozone layer. The stratospheric ozone layer absorbs ultraviolet solar radiation that can otherwise result in increased risks of skin cancers, cataracts, and harm to agricultural crops and marine life. Global measures to restore stratospheric ozone include the framework Vienna Convention for the Protection of the Ozone Layer, ratified with Senate consent in 1986, and its affiliated Montreal Protocol on Substances that Deplete the Ozone Layer, ratified with Senate consent in 1988. Both treaties have universal membership of all United Nations member and observer states.

Consistent with their Montreal Protocol obligations, countries have effectively reduced ozone-depleting substances. According to the U.S. Environmental Protection Agency (EPA), the atmospheric levels of nearly all substances subject to the Montreal Protocol have declined substantially in the past two decades, resulting in improvements to the ozone layer. However, some of the chemicals known as hydrofluorocarbons (HFCs), which emerged in the 2000s as substitutes for some of the regulated ozone-damaging substances, are greenhouse gases many times more potent than carbon dioxide.

To address HFC emissions, in 2016, countries adopted the fifth amendment to the Montreal Protocol in Kigali, Rwanda (the "Kigali Amendment"). The Kigali Amendment adds HFCs as a new class of substances subject to control measures and requires their gradual phasedown.

In 2020, Congress passed the American Innovation and Manufacturing Act ("AIM Act") to limit HFCs. In 2021, the President submitted the Kigali Amendment to the Senate for advice and consent to ratification. This Legal Sidebar addresses the context, content, and legal implications of possible ratification of the Kigali Amendment.

Background: Vienna Convention and Montreal Protocol

The United States is an original signatory to the Vienna Convention, which was ratified in 1986 with the advice and consent of the Senate. As a framework instrument, the Vienna Convention sets forth expectations of its member countries, such as meeting regularly and making subsequent global decisions for ozone protection, cooperating with other countries to conduct research and assessments, exchanging information, and adopting "appropriate measures" to protect the ozone layer.

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The United States is also a party to the Montreal Protocol, which builds on the Vienna Convention with specific targets and timetables to phase down and phase out the production and consumption of certain industrially manufactured substances that impact stratospheric ozone. Article 2 of the Montreal Protocol lists specific substances and time frames for phasedown and phaseout; a series of technical annexes list individual compounds and their relative potentials to impact stratospheric ozone. These limits on the production and use of listed substances are commonly referred to as *control measures*.

The Montreal Protocol has special provisions in Article 5 for countries with the least per capita consumption of listed substances. These *Article 5 countries* have longer time frames to reduce consumption and production of listed substances. Countries that have been responsible for most industrial production of Montreal Protocol–regulated substances (*non–Article 5 countries*), including the United States, contribute financing that supports other countries' control measures. Article 4 of the Montreal Protocol contains trade limitations for countries that do not become party to it.

The United States ratified the Montreal Protocol in 1988 following a resolution of ratification in the Senate adopted by an 83-0 vote. In 1990, Congress passed Clean Air Act amendments that included stratospheric ozone control measures in Title VI of the Act. Title VI implements U.S. obligations under the Montreal Protocol to phase down and phase out listed substances. Since Title VI's enactment, the United States has successfully reduced the production and consumption of several ozone-depleting substances consistent with its obligations.

Amendments and Adjustments

The Clean Air Act obligates EPA to update the schedules for control measures based on modifications to the Montreal Protocol that are known as *amendments* or *adjustments*. A treaty amendment is required for new substantive obligations, including any decision to list new substances and related control measures. (The Kigali Amendment is an example, as it lists and phases down HFCs as a new class of substances subject to control measures.) An adjustment is a more limited decision by the treaty Parties to modify the phasedown schedules of already-listed substances. An amendment requires formal ratification by individual countries; an adjustment requires a supermajority decision: at least two-thirds of countries that represent independent majorities of Article 5 and non–Article 5 countries.

The four amendments to the Montreal Protocol prior to the Kigali Amendment have each been ratified by every country that is a party to the Protocol, including the United States with Senate consent:

- The 1990 **London Amendment** (Senate consideration here) added new chemicals to the list of regulated substances and provided for their phaseout. It also established a financial mechanism and banned Parties from trading listed substances with non-Parties.
- The 1992 **Copenhagen Amendment** (Senate consideration here) added new chemicals and schedules to the list of regulated substances and applied all subsequent amendments and adjustments to Article 5 countries following a review of financing.
- The 1997 **Montreal Amendment** (Senate consideration here) added provisions related to a specific substance and addressed licensing procedures. In 1998, Congress amended Title VI of the Clean Air Act to reflect new commitments beyond the initial 1990 amendments.
- The 1999 **Beijing Amendment** (Senate consideration here) added a new chemical (bromochloromethane) to the list of regulated substances, implemented stricter controls for two listed substances, and created a "basic domestic needs" exception for Article 5 countries.

In addition to the compliance, finance, and trade provisions listed above, these amendments added new annexes of listed chemicals and products that impacted stratospheric ozone levels. By 2000, the lists had

expanded to include fully halogenated chlorofluorocarbons (CFCs), carbon tetrachloride, methyl chloroform, HFCs, hydrobromofluorocarbons, methyl bromide, and bromochloromethane. All of these chemicals are considered ozone-depleting substances.

Kigali Amendment

In 2016, countries adopted the fifth amendment to the Montreal Protocol in Kigali, Rwanda. The United States is considering ratification. The Kigali Amendment adds HFCs as a new class of substances subject to control measures and requires their gradual phasedown. The decision by the treaty Parties to add HFCs under the Montreal Protocol was notable because HFCs do not directly reduce stratospheric ozone but instead were included due to their use as substitutes for other ozone-depleting substances. While scientists do not consider HFCs to substantially deplete stratospheric ozone, they can be hundreds to thousands of times "more potent than carbon dioxide" in contributing to climate change.

The Kigali Amendment:

- adds HFCs as a new category of listed substances and creates a new annex that lists 18 specific HFC compounds subject to control measures;
- requires all countries that ratify the Amendment to gradually phase down the production and consumption of HFCs by 80%-85%. Specifically, non–Article 5 countries (including the United States, if ratified) reduce the production and consumption of HFCs by 10% from 2019 to 2023, increasing to 85% by 2036 (Article 5 countries must gradually reduce HFC production and consumption to either 80% by 2040 or 85% by 2047);
- specifies the baseline for HFC reductions to be calculated based on average consumption and production for 2011-2013 plus 15% of the average consumption of a different class of listed substances, hydrochlorofluorocarbons;
- allows Parties to make adjustments to the phasedown schedules and global warming potential values;
- updates the Montreal Protocol's financial mechanism to support Article 5 countries' incremental costs not otherwise covered elsewhere in transitioning to technologies that do not use HFCs;
- requires that all ratifying countries ban exports and imports of HFCs to or from any country that has not ratified the Amendment, effective in 2033;
- authorizes countries to voluntarily impose more stringent measures to regulate HFCs; and
- makes technical and conforming changes to the Montreal Protocol.

The Kigali Amendment entered into force in 2019 for any country that has ratified it. As of January 20, 2022, 130 countries have become Parties to the Amendment.

Addressing HFCs Domestically: The AIM Act

After the Kigali Amendment was adopted, and before the President requested the Senate to approve its ratification, Congress passed the AIM Act, which authorizes EPA to phase down domestic HFC consumption and production on a schedule similar to that identified in the Kigali Amendment.

Initially, some stakeholders opposed the AIM Act on the basis that it was so closely aligned with the Kigali Amendment that it circumvented the Senate advice-and-consent process for treaties under Article II of the Constitution. Others expressed support for the AIM Act as potential implementing legislation for the Kigali Amendment. Statutory requirements under the AIM Act align with key provisions of the Kigali Amendment in the following ways:

- The AIM Act identifies the same 18 HFCs for a phasedown schedule as those listed Kigali Amendment Annex F.
- The HFC phasedown schedule under the AIM Act begins with a 10% reduction in production and consumption from 2020 to 2023, increasing to 85% in 2036. Similar to Kigali, the baseline for reductions derives from a 2011-2013 baseline plus a fraction of HFC and of CFC production.
- The AIM Act requires EPA to promulgate regulations to maximize reclamation, minimize equipment leaks, and facilitate technology transitions through sector-based restrictions. This is similar to the requirement in paragraphs 6 and 7 of the Kigali Amendment to use approved technologies that destroy HFCs created during industrial manufacturing.

EPA has begun developing programs to phase down HFCs under AIM Act authorities.

Considerations for Congress

There are different views on U.S. ratification of the Kigali Amendment. One legal consideration as Congress evaluates the Kigali Amendment is what benefit additional legislation (or the lack thereof) might have in implementing the treaty, if ratified. President Biden's letter to the Senate recommending ratification states the United States already has the authority to implement the Kigali Amendment under the AIM Act and Clean Air Act. In addition to reducing HFC production and consumption, the Kigali Amendment also requires countries to report on HFC emissions and regulate exports and imports of products containing HFCs. If the United States does not ratify the Kigali Amendment, it would not be subject to those additional reporting requirements, but it would still phase down HFCs under the AIM Act.

Also, if the United States does not ratify the Kigali Amendment, U.S. producers and consumers would eventually be unable to take advantage of trading HFC products with countries that have ratified the Amendment due to the prohibition on Parties trading HFCs with non-Parties.

While many in industry support the Kigali Amendment, some stakeholders have expressed reservations about addressing greenhouse gases such as HFCs under the Montreal Protocol. Others oppose ratification due to concerns about implementation costs and differentiation between Article 5 and non–Article 5 countries.

Adjustments

It is possible that, at a later date, countries could decide to adjust the time frames for HFC phasedown. Article 2.9 of the Montreal Protocol and the Kigali Amendment allow a supermajority of countries to adopt subsequent modifications to HFC phasedown schedules. Such a change could result in divergences from the AIM Act phasedown schedules. In the past, adjustments to schedules of other listed substances have accelerated phasedowns.

On the one hand, if the United States were to ratify the Kigali Amendment and a supermajority of countries subsequently adopted modifications that were different from the AIM Act, the United States would have the option of undertaking additional domestic measures in order to comply with the modified schedules. For example, Title 42, Section 7675(f), of the *U.S. Code* is a provision of the AIM Act that authorizes EPA to undertake rulemaking to accelerate HFC phasedown schedules if it receives an appropriate rulemaking petition. Congress could also pass new legislation at that time, or EPA might seek to rely on an alternate authority for HFC regulation (discussed elsewhere).

On the other hand, if a future adjustment, AIM Act amendment, or EPA regulation were to result in divergent approaches between domestic and international obligations, the United States would have the options of abrogating its treaty obligations or withdrawing from the treaty.

Diplomacy

Some stakeholders have questioned the need for ratification because the AIM Act requires a domestic phasedown of HFCs under a schedule that appears to align with the Kigali Amendment. The executive branch maintains that ratification will "ensure the United States continues to have a full voice to represent U.S. economic and environmental interests" on the international stage.

The 1990 amendments to Title VI of the 1990 Clean Air Act implement the Montreal Protocol in part by requiring the President to pursue international agreements, develop rules, negotiate multilateral treaties, and advance proposals at the U.N. to protect the stratosphere. The United States was formally involved in Kigali Amendment negotiations since at least 2009, submitting various amendment proposals and joining in the decision to adopt the Amendment.

There are other environmental treaties that the United States has not ratified—such as the Law of the Sea Convention and Basel Convention on the Control of Transboundary Movements of Hazardous Wastes—despite playing an active role in treaty negotiations. The degree to which non-ratification may affect U.S. influence in subsequent global decisionmaking is beyond the scope of this analysis.

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